A. The rates BellSouth offers are not geographically deaveraged and, therefore, are not cost-based.

46. In order to comply with section 252(d)(1)'s requirement that rates be cost-based, rates for unbundled network elements must accurately and fully reflect each of the "cost drivers" that have a direct impact on the costs calculated.

47. For example, in the case of local loops, the primary cost drivers are loop length and customer density, which vary in predictable, demonstrable ways across different geographic areas.[12] All else being equal, longer loops are more costly than shorter loops and loops placed in areas of low customer density are more costly than loops placed in areas of higher customer density. As a result, loop costs vary significantly in different geographic areas in response to predictable changes in loop length and population density.

48. The development of cost-based rates requires that these significant geographic variations in costs be accurately and fully reflected in the rates for loops. Therefore, geographically deaveraged loop rates are generally the only types of rates that are cost-based. Meanwhile, statewide average rates for loops -- such as the LPSC has adopted and BellSouth offers -- can only be considered cost-based in the unlikely scenario where there is no demonstrable variation in loop costs across geographic areas.

49. BellSouth's own witnesses acknowledge that loop costs vary geographically and that deaveraged rates best reflect costs in urban and rural areas. See Rebuttal Testimony of

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[12] It is possible to divide the total area being studied into a series of zones based on customer density (either expressed in terms of population per square mile or telephone lines per square mile), and to calculate a cost of an unbundled network element that is specific to the characteristics of each zone. This process is used by both the Hatfield Model sponsored by AT&T and MCI and the Benchmark Cost Proxy Model sponsored by BellSouth in state universal service proceedings, including in Louisiana.

Alphonso J. Varner, LPSC Docket No. U-22022 (Sept. 5, 1997) at 33-35 (BST App. C-3, Tab 273); Direct Testimony of Robert C. Scheye, LPSC Docket No. U-22022 (July 11, 1997) at 27 (BST App. C-3, Tab 273).

50. The FCC has agreed with this conclusion, stating that "deaveraged rates more closely reflect the actual costs of providing interconnection and unbundled elements" since they ". . . account for the different costs of building and maintaining networks in different geographic areas of varying population density."[13]

51. The ALJ also agreed. In her Final Recommendation, the ALJ found that, "the implementation of geographic deaveraging is necessary for the determination of accurate costs. Accordingly, we reject the use of statewide average rates for interconnection and unbundled network elements in favor of geographically deaveraged rates." See ALJ Final Rec. at 26. The ALJ went on to recommend further proceedings in which all parties would make a proposal for deaveraged rates based on density zones.

52. Without comment or explanation, the LPSC rejected the ALJ's recommendation and adopted the statewide average rates for loops proposed by the staff consultant.

53. Since the loop rates adopted by the LPSC and now offered by BellSouth fail to adequately reflect underlying costs, they will have adverse effects on the development of competition for local exchange services in Louisiana.

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[13] Memorandum Opinion and Order, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services in Michigan, CC Docket No. 97-137, 12 FCC Rcd. 20543 (Aug. 19, 1997) ("Mich. Order") ¶ 292.

54. First, statewide average rates will send the wrong signals to the marketplace. When deciding to offer service in a given area, CLECs will be making decisions regarding whether to build their own facilities or purchase UNEs from BellSouth. In the simplest terms, CLECs will build their own facilities when they can do so for less than the UNE's rates, and will buy a UNE when they cannot. In order for CLECs to make this analysis on an informed basis, however, it is essential that loop rates accurately reflect an underlying cost that is specific to the geographic area being evaluated. Therefore, UNE rates based on a simple statewide average prevent efficient entry of facilities-based competition.

55. Second, BellSouth will receive an artificial competitive advantage in those geographic areas in which the actual loop costs are less that the statewide average loop rate. This advantage, gained through the establishment of an inefficient rate structure for elements rather than by increased efficiency on BellSouth's part, will allow BellSouth to prevent the development of local exchange competition in dense areas of Louisiana.

56. For example, in areas in Louisiana of higher than average customer density, BellSouth may incur a cost of only $9.15 per month for a 2-wire analog voice grade loop. An otherwise equally efficient CLEC, however, must pay $19.35 for the same loop. BellSouth, therefore, has an artificial $10.20 cost advantage and can always underprice the CLEC for the retail service.

57. Furthermore, in order to avoid this situation, a CLEC may decide to build its own loops. Based on the distorted information sent by the statewide average loop rate, the CLEC will build its own loops if it can do so for less than $19.35 per loop (because by doing so, it can lower its total cost). However, in a truly competitive market where rates are based on cost, it would

only be economically efficient for the CLEC to build loop facilities if it can do so for less that the ILEC's cost, which is actually $9.15. Therefore, if a CLEC determines that it can build a facility for between $9.16 and $19.34 per month, it may unknowingly engage in the inefficient duplication of facilities because of the distorted information presented by the statewide average rate.[14]

B. The loop rates BellSouth offers are inflated because they inappropriately reflect characteristics of BellSouth's existing network configuration.

58. Another significant reason that the loop rates the LPSC adopted and BellSouth offers are much higher than the cost of an unbundled loop is that they are based on BellSouth's existing network configuration and guarantee BellSouth's recovery of historic and embedded costs, however inefficient.[15]

59. Loop rates that reflect the embedded characteristics of BellSouth's existing network violate section 252(d)(1)'s requirement that rates be cost-based, "determined without reference to a rate-of-return or other rate-based proceeding." (emphasis added). This requirement prohibits BellSouth's recovery of historical and embedded costs because historical and embedded costs are only recoverable in markets governed by rate-of-return regulation.

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[14] In areas of Louisiana with higher than average costs, the opposite situation will apply. CLECs will be discouraged from building facilities in areas where such building would be economically efficient.

[15] This process of inflating costs by including embedded characteristics is not limited to the BellSouth loop cost study or even to cost studies used to develop recurring (monthly) charges for UNEs. BellSouth's cost studies for non-recurring costs also improperly include costs associated with historic (and outdated) methods of operation. Most non-recurring costs are composed primarily of labor costs and are calculated by making assumptions about the cost of labor per unit of time and estimates of the amount of time required to perform a certain task. Other non-recurring costs associated with UNEs (operational support systems, for example) also have an investment component associated with mechanized systems. The non-recurring rates adopted by the LPSC improperly reflect BellSouth's use of labor times (and resulting costs) associated with historic, labor intensive processes and out-dated, obsolete equipment.

Instead, section 252(d)(1) requires that rates be based on costs that are forward-looking and efficient -- such as those associated with the competitive local markets that the 1996 Act was designed to create.

60. Rate-of-return regulation permits full recovery of investments that were deemed prudent when made, even if they are technically obsolete and do not represent the lowest cost technology. This is because when a firm operates pursuant to rate-of-return regulation, a company is permitted to recover a "return on" and "return of" capital for all investments that are considered by the regulator to be prudent when made. In other words, if a regulated company purchases an asset that represents a prudent investment at the time it is made, the company is entitled to the opportunity to recover the cost of the asset over a reasonable depreciation life and to earn a specified return on that investment. This "protection" for the regulated company is obtained as a tradeoff for the limitation applied to the return that it earned on the investment.

61. But competitive markets are not so generous. When a company operating in a competitive environment invests in an asset, it does so at its own risk. There is no guarantee that the company will recover the cost of the asset over the depreciable life that it predicts (a "return of" capital), or that it will have the opportunity to earn a given rate-of-return (a "return on" capital).

62. This distinction becomes extremely important in an industry such as telecommunications, where local markets were supposed to become competitive with the passage of the 1996 Act, and technological change is occurring rapidly. If a competitive firm invests in an asset today and that asset becomes technically obsolete tomorrow, the competitive firm will not have an opportunity to recover the cost of the asset or to use it to generate a return. Instead, the

competitive firm must invest in the new technology in order to either be able to offer service to consumers at the lower price or with the improved quality made possible by the technical innovation.[16] A typical scenario is that the firm will "write down" those assets, thereby removing them from its books of account, before they are fully depreciated. In this scenario, the owners of the firm, not the customers, pay for the obsolete asset.

63. The Michigan Cost Principles specifically adopted by the LPSC further substantiate that cost-based rates should not reflect historical and embedded costs. See Louisiana Pricing Order at 3-4.

64. Michigan Cost Principle #1 states that "long run implies a period long enough that all costs are avoidable" and Michigan Cost Principle #7 states that "costs should be forward-looking, i. e., they should not reflect the company's embedded costs." See Louisiana Pricing Order at 3-4. These principles are related and are both integral components of any measure of economic cost, however denominated.[17]

65. Both of these cost principles represent an alternative statement of the same fundamental economic costing principle -- if "long run" is (correctly) assumed to represent a sufficient period of time so that all currently incurred costs are avoidable, then all costs that are a

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[16] If a firm does not invest in the new technology, its competitors will; in doing so they will gain a competitive advantage in terms of price and/or quality.

[17] Michigan Cost Principle #6, adopted by the LPSC, provides for a specific exception to the definition of "long run" by permitting the existing location of network facilities to act as a constraint, but clarifies that the embedded facilities themselves must be replaced with facilities that represent "the most efficient, least cost technology." See Louisiana Pricing Order at 3-4. This process of assuming existing network locations, but replacing all network facilities with the facilities that would be placed by an efficient carrier on a going-forward basis, is sometimes referred to as a "scorched node" methodology. This methodology, if properly implemented in a cost study, can be used to develop appropriate economic costs.

function of the company's embedded network characteristics or methods of operation are properly treated as avoidable and do not represent a constraint in the calculation of the relevant costs. Since all embedded network characteristics and methods of operation are not a constraint in the long run, the relevant costs may, and in fact must, be calculated based exclusively on the network characteristics and methods of operation that would be put into place today by an efficient provider.[18]

66. The BellSouth loop cost study provides an excellent example of the way that using the BellSouth embedded network as a starting point serves to inflate costs.

67. BellSouth's process of studying loop costs begins with the collection of a sample of embedded loops.[19] Specifically, BellSouth goes to a billing data base and collects a purportedly random sample[20] of circuit numbers. A list of these circuit numbers are then given to a group of

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[18] BellSouth's studies use an approach that is fundamentally inconsistent with Michigan Cost Principles #1 and #7. Essentially, BellSouth's cost studies assume the characteristics of the existing network and the existing methods of operation of the company, and set out to determine the cost -- assuming that existing network facilities remain in place with only minor modifications -- that will be incurred in the near future by BellSouth to provide the network element. BellSouth's primary cost witness has described the methodology used by BellSouth as beginning with the embedded characteristics of the existing network. "Opposing parties will have you believe that it is not necessary to analyze the existing network as a starting point; however, they are wrong. . . BellSouth's long run incremental cost studies overlay forward-looking technology on the existing infrastructure." Tr. FPSC Docket No. 960833-TP at 2222 (D. Daonne Caldwell, witness) (Att. 6 hereto). The same BellSouth witness goes on to describe the results of the BellSouth local loop cost study as representing "the cost that BellSouth will incur in the near future when provisioning loops." Id. at 2225.

[19] See Direct Testimony of D. Daonne Caldwell and William Zarakas, Docket Nos. U-22022/U-22093 (July 11, 1997) ("Caldwell/Zarakas Direct Testimony") at 22-25 (BST App. C-3, Tab 273).

[20] As I will describe later in my declaration, BellSouth selectively eliminated from this sample those circuits that would likely have been lower than average costs, thereby skewing the average cost upward.

BellSouth engineers, who match the circuit numbers to a paper drawing of the circuit configuration. This drawing contains a record of the embedded characteristics of the local loops to be studied. The engineers then make a limited number of changes to the characteristics of these local loops in order to, in the words of BellSouth's primary cost witness, transform or "redesign" them into a forward-looking arrangement. See Hearing Transcript (examination of Caldwell) at 300. The majority of the embedded characteristics of these loops, however, is retained.[21]

68. The flaw in BellSouth's process is that, even if the limited "redesign" attempted by the BellSouth engineers could be accurately made and independently verified, the fact remains that what BellSouth has done historically is simply not a reliable indicator of what an efficient carrier should do going forward. Between the time that BellSouth placed this embedded base of assets and the present, technologies of choice have changed, the relative cost of different assets (some of which can be substituted for one another) have changed, and the regulatory environment faced by BellSouth has changed. Furthermore, as explained above, the two primary cost drivers of local loop costs -- loop length and customer density -- are likely to have changed over time. BellSouth's limited efforts to "redesign" the characteristics of its embedded loops fall far short of what would be required to account for these changes.

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[21] BellSouth witness Caldwell stated during the LPSC workshops that the totality of BellSouth's "redesign" program consists of a change of the assumed crossover point for copper versus fiber feeder, a change in the assumed copper size of copper distribution cable from 24 to 26 gauge, the elimination of load coils, and the limitation of bridge taps. No other changes to embedded loop characteristics were made. See Hearing Transcript (examination of Caldwell) at 373-74; Direct Testimony of Don J. Wood, LPSC Dockets U-22022/U-22093 (Aug. 25, 1997) at 87 (BST App. C-3, Tab 276).

69. For example, in order to meet historic levels of demand, BellSouth initially placed relatively small[22] copper cables. As growth occurred and customer density increased, BellSouth placed additional small cables to meet the demand. Because the BellSouth loop cost study considers only the cable which contains the circuit selected in its sample, the cost calculated is based on the investment in the small cable. See Hearing Transcript (examination of Caldwell) at 357-58.

70. However, a properly conducted "long run" cost study would treat the size of the cables in BellSouth's embedded network as avoidable constraints and would begin with a determination of the size of the cable necessary to serve the new higher number of customers. By sizing facilities to meet forward-looking demand, the cost study would use an accurate input for the primary cost driver -- customer density. In doing so, the study would correctly approximate the long run, forward-looking costs of an efficient provider.

71. An issue as simple as whether to assume embedded or forward-looking cable sizes in a cost study can have a significant impact on the result obtained. For example, assume that for a given distribution route, BellSouth initially placed a cable containing 600 copper pairs. Over time, a second and third 600 pair cable were placed in order to accommodate customer growth (increased density). Because it is constrained by the embedded characteristics of BellSouth's existing network, the BellSouth loop cost study uses an investment assumption based on the cost per foot of a 600 pair cable. See Hearing Transcript (examination of Caldwell) at 357-58. On a going forward basis, however, an efficient carrier would place an 1800 pair cable to serve the

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[22] For purposes of this discussion, the designation of "small" and "large" cables refers simply to the number of copper pairs (and therefore the number of individual customer circuits) bound together and insulated as a single cable.

total demand. In a long run, forward-looking analysis, it is the investment in this 1800 pair cable that is relevant.

72. Because of the efficiencies gained in the manufacturing process, larger diameter cables (i. e., those that include more copper pairs) are less expensive per foot than smaller ones. The 600 pair cable that would be included in the BellSouth cost study, for example, can be purchased for a price (including engineering, delivery, and installation) of approximately $7.75 per linear foot.[23] The cost per foot per copper pair (the amount of investment that would be included in the cost study for each foot of route distance) is $.0129. Meanwhile, the 1800 pair cable that should have been included in the BellSouth cost study can be purchased (again including engineering, delivery, and installation) for approximately $16.00 per linear foot. The cost per foot per copper pair (the amount of investment that would be included in the cost study for each foot of route distance) is $.0089 -- 45 percent less than the BellSouth assumption.

73. As this example shows, the inclusion of even a simple, non-technical embedded characteristic such as historic cable sizes can single handedly increase the estimated investment by almost 50 percent.

74. Overall, BellSouth's inclusion of the embedded costs associated with its existing network configuration appears to raise loop rates in Louisiana by at least 20-25 percent.

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[23] The cable prices used in this section are as presented in section 2.3.1 of the Hatfield Model Inputs Portfolio sponsored by AT&T and MCI. While BellSouth argued (incorrectly) that the costs presented in section 2.3.1 should be higher in absolute terms in order to reflect its historic purchasing patterns, it has not argued that the relative differences in cost for different cable sizes in section 2.3.1 are not representative. As a result, this example holds whether the one uses the absolute level of cable prices from the Hatfield Model or from the BellSouth books of account.

C. The loop rates BellSouth offers are also inflated because BellSouth's loop sample deliberately omits shorter and less costly multi-line business loops.

75. The loop rates BellSouth offers are also inflated because they reflect BellSouth's deliberate omission from its loop sample of shorter and less costly multi-line business loops.

76. As described above, the BellSouth loop costing methodology begins with a sampling process. If done correctly, this process can yield a statistically valid subset of the relevant universe of loops to be studied.[24] There are two distinct requirements. First, the sample selected must meet all the requirements for statistical validity (randomness and sufficient size, for example) and, second, it must be drawn from the relevant universe being studied. For purposes of the BellSouth embedded cost study, the relevant universe is all loops in Louisiana which can be purchased as an unbundled network element by a CLEC.

77. The sample used by BellSouth in its study, however, was not drawn from a universe of all loops in Louisiana which can be purchased as an unbundled network element by a CLEC. BellSouth's primary cost witness and sponsor of the loop cost study admitted that loops with certain characteristics were deliberately excluded from consideration. See Hearing Transcript (examination of Caldwell) at 407-18; Hearing Transcript (examination of E. Smith) at 707, 718-20 (BST App. C-3, Tab 274). The number of loops systematically excluded from the BellSouth cost study is not trivial -- approximately 12 percent of the total number of loops in

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[24] For purposes of this discussion, my reference to "universe of loops" refers to the universe of loops that should have been used in BellSouth's embedded cost study. Of course, a process of determining a statistically valid sample of embedded loops should only be used when developing an embedded cost study. As described above, this is not the process that should or can be used to develop forward-looking costs.

Louisiana were excluded. Hearing Transcript (examination of Heikes) at 1228 (BST App. C-3, Tab 275).

78. The excluded loops also share a common set of characteristics that are directly related to the primary cost drivers for loop costs identified by BellSouth. As described previously, loop length and customer density are the two most important cost drivers of loop costs. When conducting its sampling process, BellSouth identified the subset of Louisiana loops that are most likely to have shorter than average lengths and be provisioned in areas with higher than average density. In other words, this subset of loops has costs that are significantly lower than the statewide average, and the reported average cost will be lower if this subset of loops is included. BellSouth then excluded this subset of loops from the sample used in its loop cost study.

79. The BellSouth witness sponsoring the loop cost study admitted that the excluded loops are likely to be shorter than average and therefore have a lower cost, and agreed that if these loops had been included the results of the BellSouth loop cost study would have been lower. See Hearing Transcript (examination of Caldwell) at 407-08, 414.

80. BellSouth's rationale for excluding these loops (and thereby increasing the average cost for loop-related UNEs) is that, in its estimation, CLECs would probably choose other means to serve these customers. See Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell, LPSC Docket Nos. U-22022/U-22093 (Sept. 5, 1997) ("Zarakas/Caldwell Rebuttal Testimony") at 37-38 (BST App. C-3, Tab 273). This reasoning ignores two important facts. First, BellSouth is currently serving these customers using the loops in question. Second, the relevant cost for establishing UNE rates is the cost of what CLECs can buy pursuant to the Act.

A cost calculated based on BellSouth's unsupported (and unsolicited) suggestion of what it thinks CLECs ought to buy is simply not relevant.

81. In a similar cost proceeding to develop rates for UNEs where BellSouth submitted the same loop cost study, the Georgia PSC reached this conclusion.[25] Specifically, the Georgia PSC found that "BellSouth's loop sample was not representative of its customer population," that 20 percent of the relevant universe of Georgia loops had been excluded, and that the loops that had been excluded tend to have shorter than average lengths and subsequently lower costs. See Georgia Pricing Order at 34-36. The Georiga PSC adopted the results of an analysis performed by its staff which attempted an "after the fact" adjustment to the cost study to compensate for the faulty loop sample.

82. Equally significantly, the Georiga PSC cited the testimony of a BellSouth statistician who stated that "although he included all types of loops in collecting his initial sample data, BellSouth omitted several types of loops from the sample it subsequently used for its cost study." Georgia Pricing Order at 34. In other words, the BellSouth statistician originally developed a random sample from the relevant universe of loops, which he then certified as statistically valid. Subsequent to his actions, BellSouth revised his sample by excluding loops with characteristics that would yield lower costs.

83. In Louisiana, the staff consultant also noted that the BellSouth study "did not cost out all loops," but instead excluded the loops associated with a specific class of customer. See Dismukes Testimony at 9. The staff consultant found such an approach to be a direct violation of the LPSC order adopting the Michigan Costing Principles. Id.

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[25] See Georgia Pricing Order at 34-36.

84. However, after making this observation, the staff consultant did not make an adjustment to the inputs in the BellSouth cost study to correct this error. The reason why is simple -- the construction of the BellSouth loop cost model effectively and completely "locks in" the sample chosen by BellSouth. It is impossible for the staff consultant, intervenors, or anyone outside of BellSouth to calculate loop costs using a different sample.

85. There are three important implications of this fact. First, the BellSouth loop cost model cannot be tested for accuracy or appropriateness. In order to evaluate a mechanized cost model, an analyst must be able to run the model from start to finish (often with multiple iterations). Only the second half of the BellSouth loop costing process can be repeated by an analyst.

86. Second, the BellSouth loop cost study cannot be "corrected" for the invalid sample by making adjustments to the study inputs. The sample which determines the loop characteristics -- the most important set of inputs to the study -- cannot be changed by either the user or an analyst, such as the staff consultant, attempting to evaluate the model.

87. Third, a decision to use the BellSouth loop cost study as a starting point for calculating costs automatically means that, even if adjustments to a significant number of inputs is subsequently made, the overstatement of costs caused by BellSouth's skewing of the sample will be included in the study results. If these results are used to set prices for UNEs, it is inevitable that the prices established will be too high, in violation of the cost principles adopted by the LPSC and in violation of the requirements of the Act.[26]

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[26] The inability to correct the sampling error in the BellSouth loop cost study is an example of a much broader problem. By design, the BellSouth loop cost study is a discontinuous process. The process of developing what BellSouth considers to be the characteristics of the

88. As a result, it is impossible for MCI to calculate the impact that the omission of these less costly loops has on the overall recurring loop rates. However, given that 12 percent of the total number of loops in Louisiana were excluded, the impact could well be significant.

D. The loop rates BellSouth offers are further inflated because they reflect BellSouth's assumption of historic, inefficient UDLC facilities rather than forward-looking IDLC facilities.

89. The loop rates BellSouth offers are further inflated because they are based on the costs of UDLC facilities for every loop which is provisioned over a digital loop carrier ("DLC") system, rather than forward-looking IDLC facilities which BellSouth is presently deploying to serve its own customers.[27] Hearing Transcript (examination of Caldwell) at 565-66.

90. Despite the cost and efficiency advantages of IDLC over UDLC -- which BellSouth readily concedes, Hearing Transcript (examination of Caldwell) at 332, 565-66 -- BellSouth pretends for purposes of its cost study that IDLC facilities do not exist and instead relies on historic, more costly and less efficient UDLC facilities. Hearing Transcript (examination

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hypothetical statewide average loop occurs outside of the mechanized model. The results of the first three steps of the BellSouth loop cost study process: extraction of a sample of circuit identifiers from a database, determination of the embedded characteristics of the loops represented by the circuit identifiers by a group of BellSouth engineers, and the "redesign" of those embedded characteristics by making a limited set of changes, are all locked in to the study. Even with the complete loop cost model software available, an analyst cannot change any of these key assumptions.

[27] The LPSC's adoption of rates that reflect obsolete UDLC technology rather than forward-looking IDLC violates Michigan Cost Principle #6, which the LPSC explicitly adopted. This cost principle states that, "technology used in a long run incremental cost study should be the least cost, most efficient technology that is currently available for purchase." Louisiana Pricing Order at 3-4. The correct application of this cost principle is essential if the cost study is to capture only those costs that would be recoverable in a competitive marketplace. In a competitive market, a firm will only be able to recover those costs associated with the most efficient method of operation. A competitive market will not allow a firm to charge the inflated prices necessary to recover the costs of inefficient, obsolete technology.

of Caldwell) at 364-65; Hearing Transcript (examination of Carter) at 2396-97 (BST App. C-3, Tab 279).

91. UDLC is an outdated, inefficient technology that BellSouth's cost and engineering witnesses agree is not a forward-looking technology and is not "the least cost, most efficient technology that is available for purchase." Hearing Transcript (examination of Caldwell) at 364-65, 565-66

92. UDLC technology became obsolete at the same time that analog switches became obsolete because it is designed around a conversion of digital to analog signals that is only necessary with an analog switch. With UDLC facilities and an analog switch, a digital signal arriving in the central office is converted to voice grade analog signals at a Central Office Terminal and then terminated on the line side of the Main Distribution Frame. A connection for each voice grade signal is then made between the horizontal side of the Main Distribution Frame and the analog switch.

93. In conjunction with a digital switch, the use of UDLC facilities becomes even more inefficient. After the digital signal is converted to analog and terminated, it must then traverse an additional piece of equipment called the Analog Interface Unit in order to be converted back to digital before connection to the switch line port of the digital switch. It is this inefficient and expensive total process of conversion and reconversion that BellSouth assumed in its loop cost study and which is reflected in the loop rates the LPSC adopted and which BellSouth now is offering.

94. As BellSouth's cost and engineering witnesses readily concede, however, a more efficient, less costly and forward-looking DLC technology is currently available for purchase and

is being deployed in BellSouth's network in Louisiana. The new technology, IDLC, is designed to operate with a digital switch, which is forward-looking switch technology and the the only type of switch BellSouth has included in its switching cost study. IDLC permits the digital signal to continue unimpeded (and unconverted to analog) from the loop carrier system to the switch line port.

95. All of the equipment costs associated with UDLC (i.e., the Central Office Terminal, the Main Distribution Frame and the Analog Interface Unit) and all other UDLC-related costs, such as floor space, power, cable racks, cabling and wiring, additional HVAC, are eliminated with deployment of IDLC. See Direct Testimony of Ernest M. Carter, Docket No. U-22022/22093 (Aug. 25, 1997) at 8 (BST App. C-3, Tab 279).

96. As a result, UDLC is 2 to 3 times more expensive than IDLC, and these added costs significantly contribute to the inflated recurring loop rates. See Hearing Transcript (examination of Carter) at 2388; Tr. SCPSC Docket No. 97-374-C at 247-49 (Ernest M. Carter, wintess) (Att. 5 hereto).

97. In addition to overstating monthly recurring loop costs, the assumption of UDLC causes related non-recurring rate elements to be inflated as well. This is because use of forward-looking IDLC facilities permits engineering tasks and work group activities to be eliminated, allows for mechanized OSS processing with little or no human intervention, and eliminates the necessity of a technician placing manual cross-connects every time a customer changes providers.

E. The rates BellSouth offers are also inflated because the staff consultant only partially corrected the erroneous "fill factor" assumptions used in the BellSouth cost studies

98. Another reason the rates BellSouth offers are inflated is because the staff consultant only partially corrected the erroneous method which BellSouth used in its costs studies to calculate fill factors.

99. Because the facilities used to provide telephone service are not designed to operate at one hundred percent capacity, cost studies typically include "fill factors" to adjust the amount of investment per unit that is assumed.[28] If applied correctly, fill factors can assure the full recovery of efficient investment without distorting costs. If applied incorrectly, fill factors can be used to overstate costs or distort cost relationships.

100. The correct application of fill factors depends primarily on a proper matching of assumptions regarding investments and demand. Conversely, the most frequent cause for the mis-application of fill factors is the failure to properly match assumptions regarding investments and demand. It is this error in BellSouth's cost studies that cause the cost studies to overstate economic costs and yield rates that, even after the staff consultant's partial correction, are both artificially high and discriminatory.

101. There are two conceptually correct approaches to the calculation of appropriate fill factors. The first is to compare the investment needed to serve the existing level of demand with

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[28] The spare capacity designed into a telephone network has several sources. The need to perform administrative functions and account for defective materials is a legitimate reason to set a fill factor to a value less than one hundred percent. Similarly, "lumpy" investments (facilities that are only available in discrete sizes) are often a legitimate source of spare capacity.

the current demand. The second is to compare the investment needed to provide a projection of future demand with the projected future demand.[29]

102 It is not conceptually valid to mix assumptions from these two methods. But BellSouth's procedures for calculating fill factors do exactly that. Specifically, BellSouth defines fill levels by comparing the investment needed to provide a projection of future demand with the existing level of demand.[30] This is not a trivial error. By combining elements of two mutually exclusive options, BellSouth has significantly reduced the level of the calculated fill and thereby overstated costs.

103. Even small changes in the value of the fill factor applied in a study can have a significant impact on the cost calculated. For example, consider a facility costing $1000 to acquire and put into place having 100 units of total capacity. With a fill rate of 85 percent, the calculated investment per unit for the facility will by $11.76. If the fill factor is lowered to 70

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[29] Stated in terms of lines, as they would be when calculating the fill factor for a cable used in the local loop or interoffice network, these two alternatives can be illustrated as follows:

1) Fill Rate = Current Working Lines / Total Lines Placed to Serve Current Demand, or

2) Fill Rate = Projection of Future Working Lines / Total Lines Placed to Serve Current and Future Demand

[30] Stated in terms of lines, as it would be when calculating the fill factor for a cable used in the local loop or interoffice network, the BellSouth definition is as follows:

Fill Rate (BST) = Current Working Lines / Total Lines Placed to Serve Current and Future Demand

In their testimony, BellSouth witnesses Zarakas/Caldwell and Baeza confirm that BellSouth places facilities for future growth, but calculates the fill factors used in its cost studies by simply dividing total capacity by existing demand. See Zarakas/Caldwell Rebuttal Testimony at 42-44; Direct Testimony of Daniel Baeza, Docket No. U-22022/22093 (July 11, 1997) at 7-8 (BST App. C-3, Tab 275).

percent, the investment per unit increases to $14.28. This 21 percent increase in calculated investment is solely the result of a change in the assumption regarding the percentage of the facility that would be in use (assuming the relevant level of demand).

104. The effects of BellSouth's methodological error are twofold: (1) UNE costs (and therefore cost-based rates) are overstated; and (2) the entire cost of capacity placed to meet future demand is assigned to CLECs. In effect, the BellSouth error charges current customers for costs incurred in order to serve future customers. See Hearing Transcript (examination of Caldwell) at 429-36 (admitting that current users are paying for their own use of facilities plus costs of future capacity). This shifting of costs between future and current customers is as inappropriate as shifting costs between current customers of different services.

105. This misassignment of costs directly violates basic cost causation principles and, specifically, Michigan Cost Principle #2 as adopted by the LPSC.[31] Put simply, the principle of cost causation requires that the costs calculated to provide a specific element or service to a given customer or group of customers include those costs -- but only those costs -- that are caused by that customer or group of customers. BellSouth's cost studies should include the costs caused by current customers. Costs that are caused by other customers, whether future customers of the same service or current customers of another unrelated service, should not be included.

106. BellSouth's method for calculating fill factors also violates the Act because it produce rates that are discriminatory.

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[31] This Principle states that, "[c]ost causation is a key concept in incremental costing." Louisiana Pricing Order at 3.

107 First, BellSouth's juxtaposition of investment placed to serve future demand with units of current demand gives it an artificial cost advantage over competitors. BellSouth's cost methodology would require CLECs to pay for the capacity placed to serve future customers, but CLECs would never get to use this capacity. Instead, BellSouth would have access to this capacity in the future, even though it had been paid for by its competitors. In fact, if a CLEC purchases a unit of capacity in the future, it will have to pay a rate that includes the cost of the capacity that it has already paid for, plus the cost to BellSouth of placing capacity for use in the more distant future. The net result of this flawed methodology is that BellSouth will be able to gain access to capacity in the future at essentially zero cost.[32]

108. The flawed BellSouth methodology also means that it will double recover its network costs. If the spare capacity for future growth is included when calculating the fill factor to be used in the cost study (but spread over only current, not future, demand units), the costs of this spare capacity will be recovered in the rates charged to current customers (including both CLECs and end users). When new customers enter the area and the expected demand growth

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[32] An example makes this problem clear: Assume that a CLEC pays $20 per month to BellSouth for an unbundled loop, based on a cost study that used a fill factor based on BellSouth's flawed formula. If BellSouth is using a fill factor that includes spare capacity for future use, the CLEC is paying for the line being used and all or part of an additional line (if BellSouth is using a distribution fill factor that is significantly less than 50 percent, as is the case in Louisiana, it is likely that the rate paid by the competitor is recovering the cost of two full lines). If the end user customer wishes to purchase an additional line from the CLEC, the CLEC would have to pay BellSouth an additional $20 to do so (thereby potentially paying for the cost of four lines). No correction would be made for the fact that the competitor is now using some of the previously spare facilities for which it has already paid. In contrast, BellSouth could offer the second line to its own customers for a very low price because the CLEC will have paid for the second line through the rate it paid for the first. Such an arrangement is discriminatory on its face and creates the opportunity for a price squeeze since BellSouth receives the second line at a cost of essentially zero, while the CLEC is forced to again pay the inflated price.

takes place, BellSouth will use the previously spare capacity in order to serve those customers (that is, of course, why it was originally placed). These future customers, or a CLEC serving these new customers, will be paying BellSouth full rates for facilities for which BellSouth has already been fully compensated by current customers -- a clear case of double recovery.

109 The staff consultant recognized these problems and stated that fill factors calculated using BellSouth's methodology, "which incorporate future growth expectations, will result in a cost for unbundled network elements which charges current customers for future growth." Dismukes Testimony at 27-28. Her adjustments to the BellSouth studies, however, only removed a portion of the capacity placed for future growth; in other words, she recommended fill factors that are between those that would be calculated using the conceptually correct methodology and those calculated by BellSouth's methodology, which spreads future capacity over current units of demand.

110. As a result of this only partial correction, CLECs purchasing UNEs at the rates proposed by the staff consultant (and adopted by the LPSC) will pay inflated rates for UNEs that allow BellSouth to partially recover the cost of serving future customers from current customers and, therefore, will allow BellSouth to over-recover, but perhaps not double recover, its network costs. Such rates are in violation of both the cost-based and nondiscriminatory requirements of the Act.

111. BellSouth's flawed fill factor methodology is further discriminatory because it creates the opportunity for a price squeeze. The LPSC's regulations establish a price floor for BellSouth's retail services. Pursuant to these regulations, BellSouth has calculated "objective" fill factors which, at least conceptually, match investments and demand and can be used to calculate

appropriate costs. The BellSouth "objective" fill factors are higher then the fill factors used in its cost studies to produce UNE rates and, therefore, result in lower costs being reported for identical network functions.

112. Authorized by the LPSC to use two different and conceptually inconsistent sets of fill factors, BellSouth can further game the costing process. When calculating costs in order to determine the price floor for a retail service as required by the LPSC's rules, BellSouth can use the higher "objective" fill factors and report a lower cost. Meanwhile, the UNE rates set by the LPSC reflect the lower fill factors used by BellSouth in its cost studies.

113. The anticompetitive opportunities created by such flexibility are clear. Consider the example described above of a facility costing $1000 to acquire and put into place and having 100 units of total capacity. With a fill rate of 85 percent, the calculated investment per unit for the facility will by $11.76. With a fill factor of 70 percent, the investment per unit increases to $14.28. This difference in calculated investment would yield a corresponding difference in the calculated monthly cost -- if the $11.76 investment resulted in a monthly cost of $4.00, for example, the $14.28 investment would result in a monthly cost of $4.84. BellSouth would, with the blessing of the LPSC, be able to charge $4.84 to a CLEC for a UNE that it reports as "costing" only $4.00 if used in its own retail service.

114. BellSouth would be able to use this difference to create a price squeeze. If a CLEC that was equally efficient as BellSouth offered a service to end users by purchasing this UNE, it would have to charge $.84/month more than BellSouth in order to recover its costs. Conversely, BellSouth could underprice the equally efficient competitor by $.84/month without violating the LPSC's rules. This ability creates the textbook definition of an anticompetitive price

squeeze and will impede the development of competition for local exchange services in Louisiana, thereby thwarting the intent of the Act.

F. The non-recurring rates BellSouth offers are inflated by the inclusion of unjustifiable manual labor costs.

115. The non-recurring rates BellSouth offers are also highly inflated because, among other reasons, they inappropriately include unjustifiable manual labor costs.[33]

116. For example, for xDSL services, the demand for which is expected to surge in upcoming years, BellSouth deliberately include unreasonably high amounts of manual labor costs in the non-recurring charges.

117. The non-recurring charges for xDSL loops are $343.13 for both 2-wire Assymetric DSL ("ADSL") and 2-wire High Bit Rate DSL ("HDSL"), and $361.45 for 4-wire HDSL. See Attachment "A" to Louisiana Pricing Order. These high charges are principally driven by the unjustifiable work functions and work times assumed by BellSouth in its cost studies for activities associated with the provisioning of an xDSL-equipped loop.[34]

118. Most glaring, BellSouth assumes that it will require 3.0833 hours for an employee to conduct an office inquiry to simply find out if facilities are available to provision each xDSL circuit -- over one-third of the work activity BellSouth indicates is required to provision the

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[33] In its non-recurring cost study, BellSouth attempted to identify functional activities, assigned a number of workforce hours to each activity, and then multiplied those hours by a labor rate. See BellSouth's Cost Studies (July 11, 1997) ("BST Cost Studies"), Volume 1, Section 2 at 4 (BST App. C-3, Tab 252).

[34] These activities include issuing an inquiry to find out if facilities are available, manually entering the service order, coordinating and dispatching technicians, assigning facilities, and actual engineering costs. See BST Cost Studies, Volume 1, Section 5 at 268-69 & Volume 3 (Narratives) at 001210, 001224, 001238.

xDSL-equipped loop. See BST Cost Studies at 000425, 000438, 000451. With BellSouth's assumed labor rates for Louisiana, this activity accounts for a significant portion of the total non-recurring charge for each xDSL-equipped loop.

119. Further, the non-recurring charge is the same even if BellSouth is already providing xDSL service to a customer and that customer chooses to switch to a competitor. In other words, even when BellSouth has been providing xDSL service to a customer, knows that facilities are available to provision an xDSL-equipped loop, and has fully connected and tested the loop, BellSouth will still charge the full non-recurring rate, which includes the costs of all of these activities. This is clearly an attempt by BellSouth to impede local competition.

120. The non-recurring rates BellSouth charges for other loops are also based on unjustifiable and erroneous assumptions which inflate them to levels that stifle competition.

121. For example, in calculating the non-recurring charge for a 2-wire analog voice grade loop -- which is $40.69, BellSouth assumes that 20 percent of the loops ordered by competitors will be new connections for previously nonexisting customers and that 80 percent will be for existing customers that decide to switch to a BellSouth competitor.

122. The 20 percent assumption for new connections dramatically overstates the number of new loop connections in Louisiana every year. In fact, BellSouth reported only a 4.8 percent loop growth rate during 1996-97. See Dismukes Testimony at 45. As a result, over 95 percent of the loops ordered by competitors are loops that already exist at any given time and BellSouth should have assumed for purposes of its cost study that, at most, only 4.8 percent of loops ordered by competitors will be new connections.